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EXAMINER

PATEL, CHANDRAHAS B

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

07/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/810,785

Applicant(s)

FEROZ ET AL.

Examiner

Chandrabas Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 14-33, 39 and 40 is/are rejected.
- 7) ☒ Claim(s) 9-13 and 34-88 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
2. The attempt to incorporate subject matter into this application by reference to US patent application number 10/676,632 is ineffective because the serial number given is not for the application intended to be incorporated by reference. Serial number 10/676,632 corresponds to US Patent 7,227,710, which is related to method of operating disk drive. The inventive entity and the title of the application do not match also.
3. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

U.S. application numbers 09/198,051, 10/099,629, 10/108,085, 10/236,149, 10/453,345 are not published.

4. The incorporation by reference will not be effective until correction is made to comply with 37 CFR 1.57(b), (c), or (d). If the incorporated material is relied upon to meet any outstanding objection, rejection, or other requirement imposed by the Office, the correction must

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be made within any time period set by the Office for responding to the objection, rejection, or other requirement for the incorporation to be effective. Compliance will not be held in abeyance with respect to responding to the objection, rejection, or other requirement for the incorporation to be effective. In no case may the correction be made later than the close of prosecution as defined in 37 CFR 1.114(b), or abandonment of the application, whichever occurs earlier.

Any correction inserting material by amendment that was previously incorporated by reference must be accompanied by a statement that the material being inserted is the material incorporated by reference and the amendment contains no new matter. 37 CFR 1.57(f).

Claim Objections

5. Claim 25 is objected to because of the following informalities: Claim 25 depends from claim 24. Claim 25 refers to "the traffic application database" which is not present in claim 24. "The traffic application database" is in claim 22. Examiner concludes that claim 25 depends from claim 22 for further examination.

6. Claim 36 is objected to because of the following informalities: Claim 36 depends from claim b3. There is no such claim. Examiner concludes that claim 36 depends from claim 34 for further examination.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 7, 21, 22, 31, 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Khisti et al. (USPN 7,239,611).

Regarding claim 1, Khisti teaches in a network device operative to control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts employ slow-start mechanisms [**Abstract**], a method comprising: estimating the initial rate demand for a data flow between a first host and a second host [**Fig. 3A, 301**]; allocating a fraction of the initial rate demand for the flow [**Col. 12, lines 37-42**]; maintaining a count of the packets associated with the flow [**Col. 23, lines 55-60**]; and increasing the fraction of the initial rate demand allocated to the flow as the count crosses at least one threshold [**Col. 23, lines 60-67 – Col. 24, lines 1-9**].

Regarding claim 2, Khisti teaches estimating the number of bytes that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of bytes in the second estimating step [**Col. 16, lines 40-44, Packet Size is the number bytes, Bottleneck_Bandwidth is threshold**].

Regarding claim 7, Khisti teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow [**Fig. 3A, 325**].

Regarding claim 21, Khisti teaches an apparatus facilitating control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts employ slow-start mechanisms [**Fig. 1, 120**] comprising: a packet processor operative to detect a data flow in network traffic traversing a communications path [**Fig. 1, 121**]; maintain a count of the packets associated with the data flow [**Col. 23, lines 55-60**]; a path rate detection module

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operative to estimate the initial rate demand for a data flow **[Fig. 3A, 301]**; estimate, for the data flow, the number of bytes that a sending host will transmit to a receiving host before achieving the initial rate demand **[Col. 16, lines 40-44, Packet Size is the number bytes, Bottleneck_Bandwidth is threshold]**; a bandwidth allocation module operative to allocate bandwidth to the data flow based in part on a target rate associated with the data flow **[Fig. 3A, 308]**; and wherein the apparatus is operative to set the initial target rate for the data flow as a fraction of the initial rate demand for the flow **[Col. 12, lines 37-42]**; and increase the target rate associated with the data flow as the count of bytes crosses a threshold value **[Col. 23, lines 60-67 – Col. 24, lines 1-9]**.

Regarding claim 22, Khisti teaches a traffic classification database including at least one traffic class, at least one attribute defining the at least one traffic class, and at least one bandwidth utilization control corresponding to the at least one traffic class, wherein the traffic classification is operative to compare attributes stored in association with traffic class identifiers to attributes of the data flow to identify a traffic class that corresponds to the data flow **[Fig. 3B, 310, Col. 19, lines 14-21]**; associate at least one bandwidth utilization control to the data flow based on the identified traffic class **[Col. 19, lines 21-24]**; and wherein the bandwidth allocation module is operative to allocate bandwidth based, at least in part, on the target rate, and the at least one bandwidth utilization control, associated with the data flow **[Fig. 6]**.

Regarding claim 31, Khisti teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow **[Fig. 3A, 325]**.

Regarding claim 32, Khisti teaches an apparatus facilitating control data flows transmitted between hosts connected to a computer network, wherein at least some of the hosts

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employ slow-start mechanisms [Fig. 1, 120] comprising: a packet processor operative to detect a data flow in network traffic traversing a communications path [Fig. 1, 121]; maintain a count of the packets associated with the data flow [Col. 23, lines 55-60]; a path rate detection module operative to estimate the initial rate demand for a data flow [Fig. 3A, 301]; estimate, for the data flow, the number of packets that a sending host will transmit to a receiving host before achieving the initial rate demand [Col. 21, lines 23-52]; a bandwidth allocation module operative to allocate bandwidth to the data flow based in part on a target rate associated with the data flow [Fig. 3A, 308]; and wherein the apparatus is operative to set the initial target rate for the data flow as a fraction of the initial rate demand for the flow [Col. 12, lines 37-42]; and increase the target rate associated with the data flow as the count of packets crosses a threshold value [Col. 23, lines 60-67 – Col. 24, lines 1-9].

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Sivakumar et al. (USPN 7,218,610).

Regarding claim 3, Khisti teaches a method as discussed in rejection of claim 2.

However, Khisti does not teach estimating the round trip time between the first and second host; and multiplying the initial demand rate associated with the data flow by the round trip time.

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Sivakumar teaches estimating the round trip time between the first and second host; and multiplying the initial demand rate associated with the data flow by the round trip time [**Col. 11, lines 51-57**].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to multiply the initial demand rate associated with the data flow by the round trip time so that time for the congestion control algorithm to reach the ideal operating rate is reduced [**Col. 11, lines 57-58**].

Regarding claim 27, Khisti teaches estimating the number of bytes that a sending host will transmit before achieving the initial rate demand [**Col. 16, lines 40-44, Packet Size is the number bytes**].

However, Khisti does not teach the path rate detection module is operative to estimate the round trip time between the sending and receiving host; and multiply the initial demand rate associated with the data flow by the round trip time.

Sivakumar teaches the path rate detection module is operative to estimate the round trip time between the sending and receiving host; and multiply the initial demand rate associated with the data flow by the round trip time [**Col. 11, lines 51-57**].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to multiply the initial demand rate associated with the data flow by the round trip time so that time for the congestion control algorithm to reach the ideal operating rate is reduced [**Col. 11, lines 57-58**].

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11. Claims 4, 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Sivakumar et al. (USPN 7,218,610) as applied to claims 3, 27 above, and further in view of Klinker et al. (USPN 7,222,190).

Regarding claims 4, 28, the references teach a method, the apparatus as discussed in rejection of claims 3, 27.

However, the references do not teach the round trip time is based on analysis of the arrival times of the handshake packets corresponding to the data flow.

Klinker teaches round trip time is based on analysis of the arrival times of the handshake packets corresponding to the data flow [Fig. 7, 791].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to base round trip time on analysis of the arrival times of the handshake packets TCP connection uses such a process [Col 18, lines 63-67 – Col 19, line 1].

Regarding claims 29, the references teach a method, the apparatus as discussed in rejection of claim 27.

However, the references do not teach the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow.

Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow [Col. 13, lines 41-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session [Col. 13, lines 41-43].

Regarding claim 30, Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow [Col. 13, lines 41-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session [Col. 13, lines 41-43].

12. Claims 5, 6, 39, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Klinker et al. (USPN 7,222,190).

Regarding claims 5 and 39, Khisti teaches a method, and an apparatus as discussed in rejection of claim 1 and 32.

However, Khisti does not teach the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow.

Klinker teaches the rate is determined by analysis of the arrival times of at least one of the handshake packets corresponding to the data flow [Col. 13, lines 41-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the rate based on the arrival times of handshake packets since TCP sessions use handshake to establish a session [Col. 13, lines 41-43].

Regarding claims 6 and 40, Khisti further teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow [Fig. 3A, 325].

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13. Claims 8, 14, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Aoki et al. (USPN 6,757,255).

Regarding claim 8, Khisti teaches a method as discussed in rejection of claim 1.

However, Khisti does not teach estimating the number of packets that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of packets in the second estimating step.

Aoki teaches estimating the number of packets that the first host will transmit before achieving the initial rate demand; and setting the at least one threshold based on the number of packets in the second estimating step [Col. 19, lines 62-67 – Col. 20, lines 1-7].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to set threshold based on the number of packets so that measurement accuracy can be enhanced [Col. 1, lines 63-67].

Regarding claim 14, Aoki teaches initial rate is based on an analysis of the arrival times of handshake packets corresponding to the data flow [Col. 7, lines 11-14, based on RTT rate can be calculated as explained in Col. 8, lines 48-56].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use handshake packets to estimate initial rate since handshaking is always done before a TCP connection [Col. 7, lines 14-15].

Regarding claims 15, 16, Khisti further teaches the initial rate demand is based on an analysis of at least one data packet corresponding to the data flow [Fig. 3A, 325].

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14. Claims 17-20, 26, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Li et al. (USPN 6,757,248).

Regarding claim 17, Khisti teaches a method as discussed in rejection of claim 1.

However, Khisti does not teach monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow; upon detection of at least one of the indications, resetting the count of the packets for the flow; and repeating the allocating, maintaining and increasing steps.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow [Col. 24, lines 1-6]; upon detection of at least one of the indications, resetting the count of the packets for the flow; and repeating the allocating, maintaining and increasing steps [Col. 24, lines 1-24].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested retransmission will occur if duplicate ACKs are received [Col. 4, lines 55-67 – Col. 5, lines 1-15].

Regarding claim 18, Li teaches determining whether at least one data packet corresponding to the data flow is a re-transmission of a previous packet [Col. 5, lines 1-15].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if at least one data packet is a re-transmission of a previous packet so that slow start threshold can be set accordingly [Col. 5, lines 1-15].

Regarding claim 19, Li teaches determining whether the re-transmitted packet arrived a threshold period of time after the last packet corresponding to the data flow [Col. 10, lines 28-32].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if re-transmitted packet arrived a threshold period of time after the last packet so that it could be decided if congestion window should be changed or not [Col. 10, lines 33-40].

Regarding claim 20, Li teaches determining whether the packet arrived a threshold period of time after the last packet corresponding to the data flow [Col. 10, lines 28-32].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine if the packet arrived a threshold period of time after the last packet so that it could be decided if congestion window should be changed or not [Col. 10, lines 33-40].

Regarding claim 26, Khisti teaches a method as discussed in rejection of claim 21.

However, Khisti does not teach monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow; upon detection of at least one of the indications, resetting the count of the bytes for the flow; and resetting the target rate for the data flow to the initial target rate.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow [Col. 24, lines 1-6]; upon detection of at least one of the indications, resetting the count of the bytes for the flow; and resetting the target rate for the data flow to the initial target rate [Col. 24, lines 1-24].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested retransmission will occur if duplicate ACKs are received [Col. 4, lines 55-67 – Col. 5, lines 1-15].

Regarding claim 33, Khisti teaches a method as discussed in rejection of claim 32.

However, Khisti does not teach monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow; upon detection of at least one of the indications, resetting the count of the packets for the flow; and resetting the target rate for the data flow to the initial target rate.

Li teaches monitoring for at least one indication that the sending host has re-initiated the slow start mechanism for the data flow [Col. 24, lines 1-6]; upon detection of at least one of the indications, resetting the count of the packets for the flow; and resetting the target rate for the data flow to the initial target rate [Col. 24, lines 1-24].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to restart the slow start mechanism for data flow since if the network is congested retransmission will occur if duplicate ACKs are received [Col. 4, lines 55-67 – Col. 5, lines 1-15].

15. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khisti et al. (USPN 7,239,611) in view of Zhang et al. (USPN 7,154,858).

Regarding claims 23, 24, Khisti teaches the apparatus as discussed in rejection of claim 21.

However, Khisti does not teach parsing at least one packet associated with the flow into a flow specification, wherein said flow specification contains at least one instance of any one of the following: a protocol family designation, a direction of packet flow designation, a protocol type designation, a pair of hosts, a pair of ports, a pointer to a MIME type a pointer to an application-specific attribute.

Zhang teaches parsing at least one packet associated with the flow into a flow specification, wherein said flow specification contains at least one instance of any one of the following: a protocol family designation, a direction of packet flow designation, a protocol type designation, a pair of hosts, a pair of ports, a pointer to a MIME type a pointer to an application-specific attribute [Col. 13, lines 43-47].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to identify at least one packet so that it could be checked if the flow matches any established traffic flows [Col. 5, line 67 – Col. 6, lines 1-3].

Regarding claim 25, Khisti teaches the apparatus as discussed in rejection of claim 22.

However, Khisti does not teach matching the flow specification to a plurality of traffic classes, each of the traffic classes defined by one or more matching attributes; and thereupon, having found a matching traffic class in the matching step, associates the flow specification with traffic crass from the plurality of traffic classes.

Zhang teaches matching the flow specification to a plurality of traffic classes, each of the traffic classes defined by one or more matching attributes; and thereupon, having found a matching traffic crass in the matching step, associates the flow specification with a traffic class from the plurality of traffic classes [Col. 5, lines 67 – Col. 6, lines 1-3].

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to match the flow specification to a plurality of traffic classes so that if the flow matches any of the established traffic flows it could be accorded to the packets [Col. 5, lines 67 – Col. 6, lines 1-3].

Allowable Subject Matter

16. Claims 9-13, 34-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandrahas Patel whose telephone number is 571-270-1211. The examiner can normally be reached on Monday through Thursday 7:30 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CBP


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